APRIL/MAY 2023

CEL21/FEL21 — ELECTROMAGNETISM AND AC CIRCUITS

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Find the expression for induced EMF.
2. What is an induction coil?
3. Find the peak values of alternating currents.
4. Mention the power factors of AC circuits.
5. List the losses in transformers.
6. What is the condition for discharge to be oscillatory?
7. List the advantages of AC over DC.
8. What is meant by armature winding?
9. State Faraday's law.
10. Define Amperes force law.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Elucidate the self-induction of a solenoid

Or

(b) Illustrate eddy current and its uses.

12. (a) Derive EMF induced in a coil rotating in a uniform magnetic field

Or

(b) Deduce the power factor of an AC circuit containing resistance.

13. (a) Discuss in detail tesla coil.

Or

(b) Interpret growth and decay of current in a circuit having L and R

14. (a) Analyse Star and Delta connections.

Or

(b) Evaluate the functions of series and shunt dynamos

15. (a) Derive Gauss's law for electrostatics.

Or

(b) Outline the Maxwell's Equations in integral form.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Demonstrate the method of measurement of intense magnetic field using search coil.

17. Elaborate the power factor of an AC circuit containing LCR.

18. Evaluate growth and decay of current in a circuit having C and R

19. Illustrate the working principles of DC Motor.

20. Explain Amperes circuital law.

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